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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,633	01/10/2002	Akio Kobayashi	111632	6574
25944	7590	01/21/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			BERTOGGIO, VALARIE E	
			ART UNIT	PAPER NUMBER
			1632	
DATE MAILED: 01/21/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/041,633	Applicant(s) KOBAYASHI ET AL.	
	Examiner Valarie Bertoglio	Art Unit 1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-10,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-10,13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/10/2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/02/2004 has been entered.

Claims 1,8 and 13 have been amended. Claims 11,12 and 15 have been cancelled. Claims 1,2,5-10,13 and 14 are pending and under consideration in the instant office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejection of claims 1,2,5-10,13 and 14 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement is withdrawn. As discussed in the personal interview on November 01, 2004, it is within the realm of expertise of the ordinary skilled artisan to use the claimed laser such that an appropriately sized hole with respect to the size of a cell can be made without sacrificing the viability of the cell.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection of claim 15 under 35 U.S.C. 102(b) is withdrawn in light of the cancellation of the claim.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The rejection of claims 1,2 and 5-10 under 35 U.S.C. 103(a) is withdrawn in light of the addition of the limitations to the claims that the laser beam be passed through a waveguide that is hollow and filled with an inert gas.

The rejection of claim 11 under 35 U.S.C. 103(a) is withdrawn as the claim has been cancelled.

A new rejection appears below.

1) Claims 1,2,5-10,13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abela (1996, USPN 5,586,982;IDS) in view of Henriksen (1997, Eur. J. Physiol., Vol. 433, pages 832-841, IDS) and further in view of Beeh (1971, US 3,573,456) and further in view of Rink (1996, USPN 5,498,260) and further in view of Matsuura (1998, Optics Letters, Vol. 23, pages 1226-1228).

Claim 1 is drawn to a method of processing a cell comprising irradiating a cell with a laser beam through a hollow optical fiber filled with an inert gas and removing or boring an entirety of the cell thus irradiated wherein the laser is reflected and condensed through a chip of quartz glass. Claim 2 limits the laser wavelength to 500 nm or less. Claims 5 and 6 add the limitation that the quartz be coated with a metal. Claim 7 limits the laser to a YAG laser, an excimer laser, an Ar ion laser a, nitrogen excited laser, or a nitrogen laser. Claims 8-10 add the method step of introducing a foreign matter into the cell, wherein the foreign substance is a

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genetic material (claim 9) or DNA (claim 10). Claim 13 limits the gas filling the hollow waveguide to either nitrogen, argon or helium. Claim 14 requires that the hollow optical fiber be coated with a metal.

Abela taught applying laser energy consisting of a 355 nm YAG laser (column 7, lines 40-42) transmitted through a fiber optic bundle (col. 5, lines 45-46; Figure 2; Figure 17) to porate cells (column 4, lines 54-56) followed by introducing a genetic material following laser treatment (column 8, lines 19-22). Abela did not teach irradiating the laser through a chip of quartz glass or to use a hollow waveguide filled with an inert gas. Abela did not teach coating the optical fiber with a metal (claim 14).

Similarly, Henriksen taught using a nitrogen laser with a wavelength of 337.1 nm (page 833, col. 1, 2nd to last para.; col. 2, line 16) that is reflected and condensed (paragraph bridging pages 834-835) to ablate a portion of a plant cell wall (page 838, col. 2, para. 2), giving access to the protoplast for a patch clamp. Henriksen did not teach use of quartz glass for the condensing and reflecting the laser or to use a hollow waveguide filled with an inert gas (claim 1). Henriksen did not teach coating the optical fiber with a metal (claim 14).

However, Beeh taught using quartz to condense a laser in the UV range (less than 500nm) because quartz and fluorite are the best material operating in this wavelength range (column 3, line 64- column 4, line 9). Beeh did not teach coating the quartz with a metal (claim 5).

However, Rink taught using quartz at the tip of a laser as it is transparent, hard and heat resistant (column 3, lines 3-5) and taught coating the tip with gold to reflect the laser energy (column 3, lines 6-16).

Matsuura (1998) taught the remaining limitations of claim 1. Matsuura (1998) taught the need for a low-loss delivery medium for excimer laser and taught that a hollow, aluminum coated waveguide filled with an inert gas is highly effective because it can be used as a flexible delivery medium for many medical applications (page 1227, col. 2, para. 3) and because inert gas shows lower attenuation of the laser and the inert gas is not subject to chemical modification under laser pulse as is observed by reactive gases such as air (see page 1227, col. 1, para. 3). Matsuura (1998) also taught coating the hollow waveguide with aluminum as it reduces the laser bending loss of the waveguide. Matsuura (1998) did not set forth the specific inert gas to be used as specified by claim 13.

However, Matsuura (US 6,141,476) taught making a flexible hollow waveguide for transmitting ultraviolet laser radiation with low attenuation (abstract; col. 1, lines 29-32 and 47-51) as the best of delivery media for ultraviolet light (column 1, line 66-column 2, line 4). Matsuura specifically taught filling the hollow waveguide with either nitrogen, argon or helium as an inert gas (col. 3, lines 8-10), fulfilling the limitation of claim 13.

Accordingly, in view of the teachings of Beeh and of Rink, it would have been obvious for one of ordinary skill in the art, at the time the claimed invention was made, to modify the teachings of Abela by passing the laser through a chip of gold coated quartz glass to reflect and condense the laser as taught by Beeh and by Rink. One of ordinary skill in the art would have been sufficiently motivated to make such a modification as it was an art-recognized goal to design a laser that can condense and reflect energy in the UV range and be resistant to the resulting heat. The skilled artisan would be further motivated to modify the laser of Abela making the waveguide hollow, coated with aluminum and filled with an inert gas because these

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specifications would allow for a flexible waveguide with low attenuation using a gas that cannot be chemically altered by the laser pulse with minimal refraction of the laser, all motivations taught by Matsuura (1998).

The skilled artisan would expect a reasonable degree of success in combining the method of Abela with the laser limitations set forth by Henriksen, Beeh, Rink and Matsuura as the laser specifications taught by Henriksen, Beeh, Rink and Matsuura are design issues used to optimize the laser and do not fundamentally alter the laser in a manner that would alter its use in boring holes in cells.

Thus, the claimed invention, as a whole, is clearly prima facie obvious in the absence of evidence to the contrary.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Valarie Bertoglio whose telephone number is (571) 272-0725.

The examiner can normally be reached on Mon-Thurs 5:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Valarie Bertoglio
Examiner
Art Unit 1632

Joe Waites
AU1632